

Docket No.: N.C. 77,897
Inventor's Name: Imam et al.

PATENT APPLICATION

Claims

What is claimed is:

543
C1
1. An acoustically damping composite article, comprising a metal foam, said metal foam having an open cell structure, impregnated with a solid, bulk non-elastomeric polymer.

2. The composite article of claim 1, wherein said metal is selected from the group consisting of aluminum, aluminum base alloys, titanium, titanium base alloys, nickel, nickel base alloys, copper, copper base alloys, iron, iron base alloys, zinc, zinc base alloys, lead, lead base alloys, silver, silver base alloys, gold, gold base alloys, platinum, platinum base alloys, tantalum, and tantalum base alloys.

3. The composite article of claim 1, wherein said polymer is selected from the groups consisting of epoxies, acrylics, hardened silicones, polyurethanes, polyimides, polyvinyls, polycarbonates, hardened natural rubbers, hardened synthetic rubbers, phenolics, polyolefins, polyamides, polyesters, fluoropolymers, poly(phenylene ether ketones), poly(phenylene ether sulfones), poly(phenylene sulfides) and melamine-formaldehyde resins.

Docket No.: N.C. 77,897
Inventor's Name: Imam et al.

PATENT APPLICATION

4. The composite article of claim 1, wherein said metal is an aluminum base alloy foam.
5. The composite article of claim 1, wherein said metal is a copper foam or a copper base alloy foam.
6. The composite article of claim 1, wherein said metal is a zinc foam or a zinc base alloy foam.
7. The composite article of claim 3, wherein said metal is an aluminum foam or an aluminum base alloy foam.
8. The composite article of claim 3, wherein said metal is a copper foam or a copper base alloy foam.
9. The composite article of claim 3, wherein said metal is a zinc foam or a zinc base alloy foam.
10. The composite article of claim 3, wherein said metal is a titanium foam or a titanium base alloy foam.
11. The composite article of claim 1, wherein said polymer is an epoxy.
12. The composite article of claim 1, wherein said polymer is an

08045397-042897

Docket No.: N.C. 77,897
Inventor's Name: Imam et al.

PATENT APPLICATION

acrylic.

13. The composite article of claim 1, wherein said polymer is a hardened silicone rubber.

14. The composite article of claim 1, wherein said polymer is a hardened natural rubber.

15. The composite article of claim 1, wherein said polymer is a hardened synthetic non-silicone rubber.

16. The composite article of claim 1, wherein said polymer is a phenolic.

17. The composite article of claim 1, wherein said cells have a locally uniform diameter.

Sub. B1 18. The composite article of claim 17, wherein said metal foam has a gradation of pores sizes in at least one direction along the metal foam.

19. A composite article according to claim 1, wherein said composite article is in the form of a sheet.

Sub. B2 20. A laminate comprising a plurality of sheets according to claim

Sub
B2
cont.



24. An acoustically damping composite article, comprising a metal foam, said metal foam having an open cell structure, impregnated with solid bulk polymer, said metal foam being, along its smallest dimensions, no smaller than 3 times the average diameter of said cells.

0345897 042897